



Sequence Listing.txt
SEQUENCE LISTING

<110> LEWIN, DAVID
STEWART, TIMOTHY P.

<120> GENES ASSOCIATED WITH OBESITY AND METHODS FOR USING THE SAME

<130> 11669.0196USC1

<140> 10/608,865

<141> 2003-06-27

<150> 09/691,439

<151> 2000-10-18

<150> 60/160,246

<151> 1999-10-19

<160> 29

<170> PatentIn version 3.3

<210> 1

<211> 1238

<212> DNA

<213> Mus sp.

<400> 1

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tatatgtgat ataaactact ttaaatagat ttgtatatta aagaaaacca aaacaaactc      240
aaccaatcca tggcagccaa aattttatat aactagggac tctccaatgg gaagaggcca      300
aataaacagc tgtggagctg taaccaatca cgttggcttg gcgtttatgc ctccctaatg      360
agttagttcc cacctgaagt gcctgggcca cacaggggtt ggagctgccc agcaacaact      420
ggtgtttgct cagatacact gtaacccttt aaggcgcctc agctgacact ttaacgttaa      480
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ccaaacactt cggaagctg tgagaagcct attttagagc tctagagaag atctacacac      840
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gtgtgagaca gacagacatt tctgttgttt tgagccactt agttgtagta ttttgtaga      960
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Sequence Listing.txt

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 tatactgcaa taaatgtttt gcgactgggc cctccctt 1238

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<220>
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<400> 2
 atgtatcaca gcctgtacct g 21

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Sequence Listing.txt

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Sequence Listing.txt

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<400> 15
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Sequence Listing.txt

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600

660

Sequence Listing.txt

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catccctagg aagctagagc gtcctctta ctctacaccg ggtacatctc aggagtcccc	1020
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Sequence Listing.txt

catttatgct tatgataaag tgtaacttgt aaattaggca aaggaagaaa taaacaacta 1140
 ctaatagtaa ataactcaca ttagaatgat tataatatac tgtgtaactt tgtaagcaat 1200
 atactgcaat aaatgttttg cgactgggcc ctccctt 1237

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 <213> Mus sp.

<400> 22

Lys Gly Gly Pro Ser Arg Lys Thr Phe Ile Ala Val Tyr Cys Leu Gln
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Ser Tyr Thr Val Tyr Tyr Asn His Ser Asn Val Ser Tyr Leu Leu Leu
 20 25 30

Val Val Val Tyr Phe Phe Leu Cys Leu Ile Tyr Lys Leu His Phe Ile
 35 40 45

Ile Ser Ile Asn Glu Tyr Arg Lys Thr Gly His Thr Gly Ala Asp Ser
 50 55 60

Leu Gln Leu Pro Pro Ser Ile His Gly Gly Leu Leu Arg Cys Thr Arg
 65 70 75 80

Cys Arg Val Arg Gly Ala Leu Leu Pro Arg Asp Ala Leu Thr Lys Tyr
 85 90 95

Tyr Asn Val Ala Gln Asn Asn Arg Asn Val Cys Leu Ser His Thr Ala
 100 105 110

Gly Ser Gln Met Ser Cys Val Cys Val Cys Val Cys Val Cys Val Cys
 115 120 125

Val Cys Val Cys Val Asp Leu Leu Ser Ser Lys Ile Gly Phe Ser Gln
 130 135 140

Leu Pro Glu Val Phe Gly Pro Ser Asp Gly Arg Trp Leu Val Ile Phe
 145 150 155 160

Ile Gln Cys Leu His Phe Ile Ala Pro Leu Cys Val Ser Leu Phe Thr
 165 170 175

Arg Thr Leu Trp Val Ile His Leu Gly Pro Pro Tyr Leu Ser Asp Leu
 180 185 190

Asn Asp Pro Gly Asn His Ser Leu Lys Asp Asn Thr Trp Arg Tyr Gly
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20

25

30

Ile Ser Ser Phe Ala Phe Thr Ser Tyr Thr Leu Ser Ala Met Asn Thr
 35 40 45
 Glu Lys Gln Asp Thr Gln Gly Leu Ile Val Cys Ser Phe His His Pro
 50 55 60
 Ser Met Gly Asp Ser Asp Val Pro Gly Val Glu Glu Glu Arg Ser Ser
 65 70 75 80
 Phe Leu Gly Met Leu Gln Asn Thr Thr Thr Lys Trp Leu Lys Thr Thr
 85 90 95
 Glu Met Ser Val Cys Leu Thr Leu Leu Ala Ala Arg Cys Arg Val Cys
 100 105 110
 Val Cys Val Cys Val Cys Val Cys Val Cys Val Cys Val Ile Phe Ser
 115 120 125
 Arg Ala Leu Lys Ala Ser His Ser Phe Pro Lys Cys Leu Val Leu Pro
 130 135 140
 Glu Met Glu Asp Gly Trp Ser Ser Ser Phe Ser Val Cys Ile Ser Ser
 145 150 155 160
 Pro Leu Cys Val Cys Leu Phe Leu Gln Gly His Cys Gly Ser Phe Thr
 165 170 175
 Trp Gly Leu Leu Thr Ser Val Thr Ser Met Thr Leu Glu Ile Ile Leu
 180 185 190
 Ser Lys Lys Thr Thr Leu Gly Gly Thr Gly Thr Thr Ile Ala Cys Tyr
 195 200 205
 Arg Lys Leu Cys His Val Thr Phe Val Arg Ile Thr Ala Leu Thr Ser
 210 215 220
 Ala Ser Arg Leu Arg Leu Tyr Leu Tyr Tyr Ile Arg Leu Leu Asn Val
 225 230 235 240
 Lys Val Ser Ala Glu Ala Pro Arg Val Thr Val Tyr Leu Ser Lys His
 245 250 255
 Gln Leu Leu Leu Gly Ser Ser Asn Pro Cys Val Ala Gln Ala Leu Gln
 260 265 270

Sequence Listing.txt

Val Gly Thr Asn Ser Leu Gly Arg His Lys Arg Gln Ala Asn Val Ile
275 280 285

Gly Tyr Ser Ser Thr Ala Val Tyr Leu Ala Ser Ser His Trp Arg Val
290 295 300

Pro Ser Tyr Ile Lys Phe Trp Leu Pro Trp Ile Gly Val Cys Phe Gly
305 310 315 320

Phe Leu Tyr Thr Asn Leu Phe Lys Val Val Tyr Ile Thr Tyr Asn Lys
325 330 335

Ile Asn Leu Phe Lys Asn Phe Phe Val Phe Lys Ser Cys Lys Ala Lys
340 345 350

Val Thr Glu Lys Asp His Asp Cys Val Pro Phe Tyr Ala Leu Gly Leu
355 360 365

Val Ser Ile Leu Ile Leu His Tyr Gly Gln Leu Leu Ile Gln Lys Ile
370 375 380

Lys Ser Lys Pro Arg
385

<210> 24
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<212> PRT
<213> Mus sp.

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Gly Arg Ala Gln Ser Gln Asn Ile Tyr Cys Ser Ile Leu Leu Thr Lys
1 5 10 15

Leu His Ser Ile Leu Ser Phe Cys Glu Leu Phe Thr Ile Ser Ser Cys
20 25 30

Leu Phe Leu Pro Leu Pro Asn Leu Gln Val Thr Leu Tyr His Lys His
35 40 45

Lys Ile Gln Lys Asn Arg Thr His Arg Gly Ser Ala Ala Ser Thr Ile
50 55 60

His Pro Trp Gly Thr Pro Glu Met Tyr Pro Val Ser Lys Arg Ser Ala
65 70 75 80

Leu Ala Ser Gly Cys Ser Asn Lys Ile Leu Gln Leu Ser Gly Ser Lys
85 90 95

Sequence Listing.txt

Gln Gln Lys Cys Leu Ser Val Ser His Cys Trp Gln Pro Asp Val Val
100 105 110

Cys Val Cys Val Cys Val Cys Val Cys Val Cys Val Cys Val Cys Arg
115 120 125

Ser Ser Leu Glu Leu Asn Arg Leu Leu Thr Ala Ser Arg Ser Val Trp
130 135 140

Ser Phe Leu Arg Trp Lys Met Val Gly His Leu His Ser Val Ser Ala
145 150 155 160

Phe His Arg Pro Ser Val Cys Val Ser Phe Tyr Lys Asp Thr Val Gly
165 170 175

His Ser Pro Gly Ala Ser Leu Pro Gln Pro Gln Pro Trp Lys Ser Phe
180 185 190

Ser Leu Lys Arg Gln His Leu Glu Val Arg Gly Leu Leu His Val Ile
195 200 205

Glu Ser Tyr Val Thr Leu Ser Glu Gln Arg Tyr Lys Pro His Glu Leu
210 215 220

Gln Asp Leu Asp Tyr Asp Thr Cys Thr Thr Leu Gly Asn Cys Leu Thr
225 230 235 240

Leu Lys Cys Gln Leu Arg His Leu Lys Gly Leu Gln Cys Ile Ala Asn
245 250 255

Thr Ser Cys Cys Trp Ala Ala Pro Thr Pro Val Trp Pro Arg His Phe
260 265 270

Arg Trp Glu Leu Thr His Gly Gly Ile Asn Ala Lys Pro Thr Leu Val
275 280 285

Thr Ala Pro Gln Leu Phe Ile Trp Pro Leu Pro Ile Gly Glu Ser Leu
290 295 300

Val Ile Asn Phe Gly Cys His Gly Leu Val Glu Phe Val Leu Val Phe
305 310 315 320

Phe Asn Ile Gln Ile Tyr Leu Lys Phe Ile Ser His Ile Ile Asn Lys
325 330 335

Ile Phe Phe Lys Lys Thr Phe Leu Phe Ser Asn His Ala Lys Leu Arg
340 345 350

Sequence Listing.txt

Ser Arg Arg Arg Lys Thr Met Thr Val Cys Leu Phe Met Leu Trp Val
355 360 365

Trp Ser Pro Phe Tyr Phe Asn Thr Met Val Ser Tyr Tyr Arg Lys Ser
370 375 380

Asn Pro Ser Gln Asp
385

<210> 25
<211> 387
<212> PRT
<213> Mus sp.

<400> 25

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1 5 10 15

Lys Tyr Asn Gly Asp Gln Thr Gln Ser Ile Lys Arg His Thr Val Met
20 25 30

Val Phe Leu Leu Arg Asp Leu Ser Phe Ala Phe Glu Asn Lys Lys Val
35 40 45

Phe Leu Lys Lys Ile Tyr Leu Phe Ile Ile Cys Asp Ile Asn Tyr Phe
50 55 60

Lys Ile Cys Ile Leu Lys Lys Thr Lys Thr Asn Ser Thr Asn Pro Trp
65 70 75 80

Gln Pro Lys Phe Tyr Ile Thr Arg Asp Ser Pro Met Gly Arg Gly Gln
85 90 95

Ile Asn Ser Cys Gly Ala Val Thr Asn His Val Gly Leu Ala Phe Met
100 105 110

Pro Pro Val Ser Ser His Leu Lys Cys Leu Gly His Thr Gly Val Gly
115 120 125

Ala Ala Gln Gln Gln Leu Val Phe Ala Gln Ile His Cys Asn Pro Leu
130 135 140

Arg Cys Leu Ser His Phe Asn Val Lys Gln Leu Pro Asn Val Val Gln
145 150 155 160

Val Ser Ser Lys Ser Ser Ser Gly Leu Arg Cys Tyr Ser His Glu Ser
165 170 175

Sequence Listing.txt

His Val Thr Leu Ser Ile Thr Cys Tyr Ser Ser Pro Arg Thr Ser Lys
180 185 190

Cys Cys Leu Phe Arg Glu Asn Asp Phe Gln Gly His Gly His Gly Lys
195 200 205

Glu Ala Pro Gly Glu Pro Thr Val Ser Leu Lys Glu Thr His Thr Glu
210 215 220

Gly Arg Asn Ala Asp Thr Glu Arg Pro Thr Ile Phe His Leu Arg Lys
225 230 235 240

Asp Gln Thr Leu Arg Glu Ala Val Arg Ser Leu Phe Ser Ser Arg Glu
245 250 255

Asp Leu His Thr His Thr His Thr His Thr His Thr His Thr His Thr
260 265 270

His Thr Thr Ser Gly Cys Gln Gln Cys Glu Thr Asp Arg His Phe Cys
275 280 285

Cys Phe Glu Pro Leu Ser Cys Ser Ile Leu Leu Glu His Pro Glu Ala
290 295 300

Arg Ala Leu Leu Leu Leu Tyr Thr Gly Tyr Ile Ser Gly Val Pro His
305 310 315 320

Gly Trp Met Val Glu Ala Ala Asp Tyr Gln Pro Leu Cys Val Leu Phe
325 330 335

Phe Cys Ile His Leu Cys Leu Ser Val Thr Cys Lys Leu Gly Lys Gly
340 345 350

Arg Asn Lys Gln Leu Leu Ile Val Asn Asn Ser His Asn Asp Tyr Asn
355 360 365

Ile Leu Cys Asn Phe Val Ser Asn Ile Leu Gln Met Phe Cys Asp Trp
370 375 380

Ala Leu Pro
385

<210> 26
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<213> Mus sp.

<400> 26

Sequence Listing.txt

Tyr Leu Gly Leu Asp Leu Ile Phe Cys Ile Ser Asn Pro Cys Ser Ile
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 20 25 30
 Ser Tyr Val Thr Leu Ala Leu His Asp Leu Lys Thr Lys Lys Phe Phe
 35 40 45
 Lys Arg Phe Ile Tyr Leu Leu Tyr Val Ile Thr Thr Leu Asn Arg Phe
 50 55 60
 Val Tyr Arg Lys Pro Lys Gln Thr Gln Pro Ile His Gly Ser Gln Asn
 65 70 75 80
 Phe Ile Leu Gly Thr Leu Gln Trp Glu Glu Ala Lys Thr Ala Val Glu
 85 90 95
 Leu Pro Ile Thr Leu Ala Trp Arg Leu Cys Leu Pro Asn Glu Leu Val
 100 105 110
 Pro Thr Ser Ala Trp Ala Thr Gln Gly Leu Glu Leu Pro Ser Asn Asn
 115 120 125
 Trp Cys Leu Leu Arg Tyr Thr Val Thr Leu Gly Ala Ser Ala Asp Thr
 130 135 140
 Leu Thr Leu Ser Ser Tyr Leu Met Tyr Arg Tyr His Asn Leu Ser Leu
 145 150 155 160
 Glu Ala His Glu Val Tyr Asn Ala Val Ile Leu Thr Lys Val Thr His
 165 170 175
 Ser Phe Leu His Ala Ile Val Val Pro Val Pro Pro Ser Val Val Phe
 180 185 190
 Leu Glu Arg Met Ile Ser Arg Val Ile Glu Val Thr Glu Val Arg Arg
 195 200 205
 Pro Gln Val Asn Asp Pro Gln Cys Pro Cys Lys Lys Arg His Thr Gln
 210 215 220
 Arg Gly Asp Glu Met Gln Thr Leu Asn Glu Asp Asp Gln Pro Ser Ser
 225 230 235 240
 Ile Ser Gly Arg Thr Lys His Phe Gly Lys Leu Glu Ala Tyr Phe Arg
 245 250 255

Sequence Listing.txt

Ala Leu Glu Lys Ile Tyr Thr His Thr His Thr His Thr His
260 265 270

Thr His Thr His Thr Arg His Leu Ala Ala Ser Ser Val Arg Gln Thr
275 280 285

Asp Ile Ser Val Val Leu Ser His Leu Val Val Val Phe Cys Ser Ile
290 295 300

Pro Arg Lys Leu Glu Arg Ser Ser Tyr Ser Thr Pro Gly Thr Ser Gln
305 310 315 320

Glu Ser Pro Met Asp Gly Trp Trp Lys Leu Gln Thr Ile Ser Pro Cys
325 330 335

Val Ser Cys Phe Ser Val Phe Ile Tyr Ala Tyr Asp Lys Val Leu Val
340 345 350

Asn Ala Lys Glu Glu Ile Asn Asn Tyr Ile Thr His Ile Arg Met Ile
355 360 365

Ile Ile Tyr Cys Val Thr Leu Ala Ile Tyr Cys Asn Lys Cys Phe Ala
370 375 380

Thr Gly Pro Ser Leu
385

<210> 27
<211> 379
<212> PRT
<213> Mus sp.
<400> 27

Ile Leu Ala Trp Ile Phe Ser Val Ser Val Thr Asp His Ser Val Lys
1 5 10 15

Val Leu Lys Trp Arg Pro Asp Pro Lys His Lys Lys Ala His Ser His
20 25 30

Gly Leu Ser Pro Thr Pro Leu Cys Met Ile Lys Gln Lys Ser Phe Phe
35 40 45

Lys Lys Asp Leu Phe Ile Tyr Tyr Met Tyr Lys Leu Leu Ile Asp Leu
50 55 60

Tyr Ile Lys Glu Asn Gln Asn Lys Leu Asn Gln Ser Met Ala Ala Lys
65 70 75 80

Sequence Listing.txt

Ile Leu Tyr Asn Gly Leu Ser Asn Gly Lys Arg Pro Asn Lys Gln Leu
85 90 95

Trp Ser Cys Asn Gln Ser Arg Trp Leu Gly Val Tyr Ala Ser Leu Met
100 105 110

Ser Phe Pro Pro Glu Val Pro Gly Pro His Arg Gly Trp Ser Cys Pro
115 120 125

Ala Thr Thr Gly Val Cys Ser Asp Thr Leu Pro Phe Lys Val Pro Gln
130 135 140

Leu Thr Leu Arg Ala Val Thr Cys Ser Thr Gly Ile Ile Ile Val Leu
145 150 155 160

Lys Leu Met Arg Phe Ile Thr Leu Leu Phe Ser Arg Lys Ser Arg Asp
165 170 175

Ile Ala Phe Tyr Asn Met Leu Ser Pro Tyr Leu Gln Val Leu Ser Phe
180 185 190

Arg Glu Phe Pro Gly Ser Leu Arg Ser Leu Arg Gly Gly Pro Arg Met
195 200 205

Thr His Ser Val Leu Val Lys Arg Asp Thr His Arg Gly Ala Met Lys
210 215 220

Cys Arg His Met Lys Met Thr Asn His Leu Pro Ser Gln Glu Gly Pro
225 230 235 240

Asn Thr Ser Gly Ser Cys Glu Lys Pro Ile Leu Glu Leu Arg Arg Ser
245 250 255

Thr His Thr His Thr His Thr His Thr His Thr His Thr His
260 265 270

Asp Ile Trp Leu Pro Ala Val Asp Arg Gln Thr Phe Leu Leu Phe Ala
275 280 285

Thr Leu Tyr Phe Val Arg Ala Ser Leu Gly Ser Ser Ala Pro Leu Thr
290 295 300

Leu His Arg Val His Leu Arg Ser Pro Pro Trp Met Asp Gly Gly Ser
305 310 315 320

Cys Arg Leu Ser Ala Pro Val Cys Pro Val Phe Leu Tyr Ser Phe Met

Leu Met Ile Lys Cys Asn Leu Ile Arg Gln Arg Lys Lys Thr Thr Thr
340 345 350

Asn Ser Lys Leu Thr Leu Glu Leu Tyr Thr Val Leu Cys Lys Gln Tyr
355 360 365

Thr Ala Ile Asn Val Leu Arg Leu Gly Pro Pro
370 375

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<212> DNA
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Sequence Listing.txt

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<400> 29

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Cys Val Met Val Phe Ala Ser Ala Glu Arg Pro Val Phe Thr Asn His
 20 25 30

Phe Leu Val Glu Leu His Lys Asp Gly Glu Glu Glu Ala Arg Gln Val
 35 40 45

Ala Ala Glu His Gly Phe Gly Val Arg Lys Leu Pro Phe Ala Glu Gly
 50 55 60

Leu Tyr His Phe Tyr His Asn Gly Leu Ala Lys Ala Lys Arg Arg Arg
 65 70 75 80

Ser Leu His His Lys Arg Gln Leu Glu Arg Asp Pro Arg Ile Lys Met
 85 90 95

Sequence Listing.txt

Ala Leu Gln Gln Glu Gly Phe Asp Arg Lys Lys Arg Gly Tyr Arg Asp
100 105 110

Ile Asn Glu Ile Asp Ile Asn Met Asn Asp Pro Leu Phe Thr Lys Gln
115 120 125

Trp Tyr Leu Phe Asn Thr Gly Gln Ala Asp Gly Thr Pro Gly Leu Asp
130 135 140

Leu Asn Val Ala Glu Ala Trp Glu Leu Gly Tyr Thr Gly Lys Gly Val
145 150 155 160

Thr Ile Gly Ile Met Asp Asp Gly Ile Asp Tyr Leu His Pro Asp Leu
165 170 175

Ala Tyr Asn Tyr Asn Ala Asp Ala Ser Tyr Asp Phe Ser Ser Asn Asp
180 185 190

Pro Tyr Pro Tyr Pro Arg Tyr Thr Asp Asp Trp Phe Asn Ser His Gly
195 200 205

Thr Arg Cys Ala Gly Glu Val Ser Ala Ala Ala Ser Asn Asn Ile Cys
210 215 220

Gly Val Gly Val Ala Tyr Asn Ser Lys Val Ala Gly Ile Arg Met Leu
225 230 235 240

Asp Gln Pro Phe Met Thr Asp Ile Ile Glu Ala Ser Ser Ile Ser His
245 250 255

Met Pro Gln Leu Ile Asp Ile Tyr Ser Ala Ser Trp Gly Pro Thr Asp
260 265 270

Asn Gly Lys Thr Val Asp Gly Pro Arg Glu Leu Thr Leu Gln Ala Met
275 280 285

Ala Asp Gly Val Asn Lys Gly Arg Gly Gly Lys Gly Ser Ile Tyr Val
290 295 300

Trp Ala Ser Gly Asp Gly Gly Ser Tyr Asp Asp Cys Asn Cys Asp Gly
305 310 315 320

Tyr Ala Ser Ser Met Trp Thr Ile Ser Ile Asn Ser Ala Ile Asn Asp
325 330 335

Gly Arg Thr Ala Leu Tyr Asp Glu Ser Cys Ser Ser Thr Leu Ala Ser
340 345 350

Sequence Listing.txt

Thr Phe Ser Asn Gly Arg Lys Arg Asn Pro Glu Ala Gly Val Ala Thr
355 360 365

Thr Asp Leu Tyr Gly Asn Cys Thr Leu Arg His Ser Gly Thr Ser Ala
370 375 380

Ala Ala Pro Glu Ala Ala Gly Val Phe Ala Leu Ala Leu Glu Ala Asn
385 390 395 400

Leu Asp Leu Thr Trp Arg Asp Met Gln His Leu Thr Val Leu Thr Ser
405 410 415

Lys Arg Asn Gln Leu His Asp Glu Val His Gln Trp Arg Arg Asn Gly
420 425 430

Val Gly Leu Glu Phe Asn His Leu Phe Gly Tyr Gly Val Leu Asp Ala
435 440 445

Gly Ala Met Val Lys Met Ala Lys Asp Trp Lys Thr Val Pro Glu Arg
450 455 460

Phe His Cys Val Gly Gly Ser Val Gln Asn Pro Glu Lys Ile Pro Pro
465 470 475 480

Thr Gly Lys Leu Val Leu Thr Leu Lys Thr Asn Ala Cys Glu Gly Lys
485 490 495

Glu Asn Phe Val Arg Tyr Leu Glu His Val Gln Ala Val Ile Thr Val
500 505 510

Asn Ala Thr Arg Arg Gly Asp Leu Asn Ile Asn Met Thr Ser Pro Met
515 520 525

Gly Thr Lys Ser Ile Leu Leu Ser Arg Arg Pro Arg Asp Asp Asp Ser
530 535 540

Lys Val Gly Phe Asp Lys Trp Pro Phe Met Thr Thr His Thr Trp Gly
545 550 555 560

Glu Asp Ala Arg Gly Thr Trp Thr Leu Glu Leu Gly Phe Val Gly Ser
565 570 575

Ala Pro Gln Lys Gly Leu Leu Lys Glu Trp Thr Leu Met Leu His Gly
580 585 590

Thr Gln Ser Ala Pro Tyr Ile Asp Gln Val Val Arg Asp Tyr Gln Ser

Sequence Listing.txt

595

600

605

Lys Leu Ala Met Ser Lys Lys Gln Glu Leu Glu Glu Glu Leu Asp Glu
610 615 620

Ala Val Glu Arg Ser Leu Gln Ser Ile Leu Arg Lys Asn
625 630 635